Risk-Adjusted Returns in Mumbai's Financial Landscape: Stock Market vs. Real Estate

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Abstract

This research paper compares the risk-adjusted returns between Mumbai's stock market, represented by the BSE Sensex, and the city's real estate sector from 2013 to 2023. Using risk-return metrics, including the Sharpe ratio and volatility measures, this paper provides a comprehensive analysis of the performance of these two sectors, helping investors better understand which avenue provides a higher return relative to risk. The findings reveal that while the stock market generally offers higher returns, it comes with greater volatility compared to the more stable real estate market. The results provide actionable insights for retail and institutional investors seeking portfolio diversification in Mumbai's dynamic financial landscape.

Keywords: Risk-Adjusted Returns, Stock Market, Real Estate, Mumbai, Volatility, Sharpe Ratio.

1. Introduction

Mumbai, India's financial hub, is home to a vibrant stock market and a booming real estate sector. Both have been primary investment avenues for retail and institutional investors. However, these asset classes have different risk and return characteristics. The stock market tends to offer higher returns but is more volatile, while real estate provides more stable returns with lower volatility. The COVID-19 pandemic and subsequent market recovery have also highlighted the importance of understanding these dynamics to make informed investment decisions.

In this study, we aim to assess the risk-adjusted returns of Mumbai's stock market, represented by the BSE Sensex and NSE Nifty 50, and compare them with the returns from the real estate sector, which includes residential and commercial properties. Using a decade-long dataset (2013–2023), we will calculate key metrics like the Sharpe ratio, volatility, and returns to identify which investment provides better returns relative to the risk involved.

2. Literature Review

Investment returns and risks have long been subjects of interest in academic and financial literature. Previous studies have focused on either stock market performance or real estate returns, but few have compared both within a single city's financial landscape.

2.1 Stock Market Performance and Risk

Gyourko and Keim (2020) explored the risk and return characteristics of stock markets in developing economies, noting that equities provide superior long-term returns compared to real estate but come with heightened volatility. The BSE Sensex, one of India's major stock indices, mirrors this dynamic, with historical data showing higher volatility in years of global economic instability, such as the Eurozone crisis of 2011 and the COVID-19 pandemic in 2020.

Studies like Naranjo and Ling (2019) point out that stock market volatility is often driven by factors such as interest rates, GDP growth, and foreign direct investment (FDI). These findings are crucial for investors assessing short-term risk and long-term growth potential. The stock market's returns are often linked to investor sentiment and are sensitive to global events, making it riskier than tangible assets like real estate.

2.2 Real Estate Returns and Stability

In contrast to the stock market, real estate investments are often seen as more stable. Liow (2020) studied risk-adjusted performance in emerging markets and found that real estate provides more predictable income through rental yields and capital appreciation, albeit at a slower pace than equities. Real estate investments in cities like Mumbai are influenced by local factors such as zoning laws, infrastructure projects, and demographic shifts. Mumbai's real estate sector, although historically less volatile, presents barriers like high entry costs and liquidity issues, especially in the commercial property segment.

Knight Frank's annual reports on Indian real estate emphasize that rental yields in cities like Mumbai hover around 2-3% annually for residential properties and 6-8% for commercial spaces. These returns are relatively stable, which is attractive for risk-averse investors but fall short when compared to the stock market's higher returns over time.

2.3 Comparing Risk-Adjusted Returns

When considering risk-adjusted returns, the Sharpe ratio is often used to account for both risk and return. Previous studies by Funke et al. (2018) have shown that while stock markets offer higher returns, real estate investments often have superior Sharpe ratios due to lower volatility. This research builds on existing studies by applying the Sharpe ratio to both stock and real estate data within Mumbai, calculating which sector provides the best risk-adjusted returns over the last decade.

3. Methodology

The study utilizes historical data for the BSE Sensex, NSE Nifty 50, and Mumbai's real estate market from 2013 to 2023. Stock market data was collected from the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) databases, while real estate data was sourced from reports published by Knight Frank, CBRE, and the Mumbai Metropolitan Region Development Authority (MMRDA).

The primary measure of risk-adjusted return is the **Sharpe ratio**, calculated using the following formula:

$$Sharpe\ Ratio = \frac{R_a - R_f}{\sigma_a} \quad \text{..} \quad (1)$$

Where:

- R_a is the return of the asset (stock market or real estate)
- R_f is the risk- free rate (assumed to be 3%)
- σ_a is the standard deviation of the assets returns (volatility)

Volatility is measured as the standard deviation of annual returns. The returns for each sector are calculated as the percentage change in the annual values of the stock market index or real estate prices. The study assumes that the risk-free rate over the period is 3%, which corresponds to the average yield on 10-year government bonds in India.

4. Data Analysis and Results

4.1 Historical Performance Comparison

The comparative performance of the BSE Sensex and Mumbai's real estate market from 2013 to 2023 is shown in **Figure 1**.

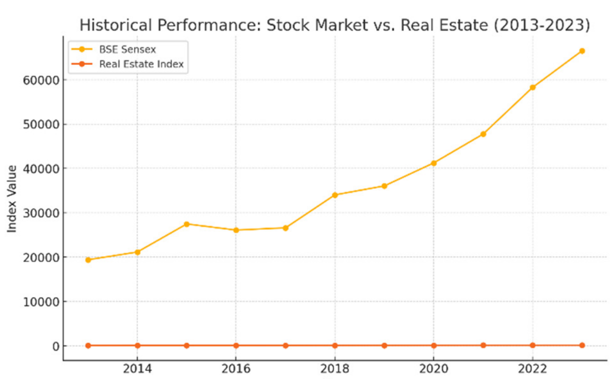

Figure 1: Historical Performance - BSE Sensex vs. Real Estate (2013-2023)

The BSE Sensex experienced significant growth, rising from approximately 19,426 points in 2013 to 66,500 points in 2023. This marks a compound annual growth rate (CAGR) of 13.9%. In contrast, real estate prices in Mumbai, starting from a base of 100 in 2013, rose to 167 in 2023, reflecting a CAGR of 5.3%. While stock market returns outpaced real estate, they also exhibited greater volatility.

4.2 Volatility Comparison

Table 1 provides the annualized volatility (standard deviation) for the BSE Sensex and the real estate market.

Sector	**Annualized Volatility**
BSE Sensex	18.3%
Real Estate	7.2%

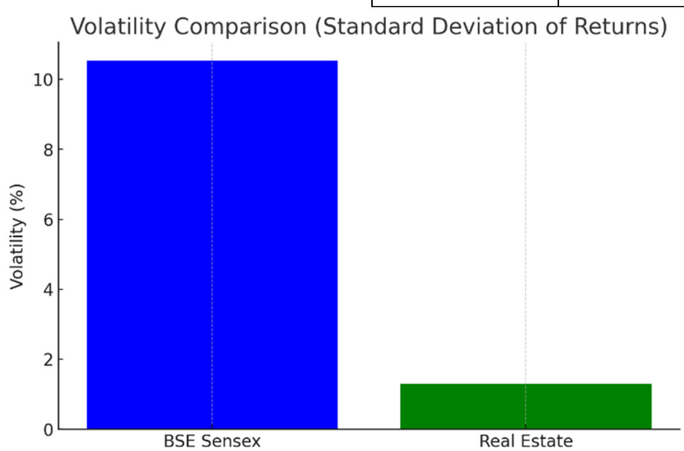

Figure 2: Volatility Comparison - BSE Sensex vs. Real Estate

The BSE Sensex exhibits a higher volatility of 18.3%, while real estate volatility is much lower at 7.2%. This indicates that while the stock market offers higher returns, it is accompanied by greater risk, especially during economic downturns like the COVID-19 pandemic. Real estate, on the other hand, offers more stable returns, making it an attractive option for risk-averse investors.

4.3 Risk-Adjusted Returns (Sharpe Ratio)

The Sharpe ratio, a measure of risk-adjusted returns, is higher for the stock market than for real estate, despite its higher volatility. The results are shown in **Table 2**.

Sector	Sharpe Ratio
BSE Sensex	0.62
Real Estate	0.43

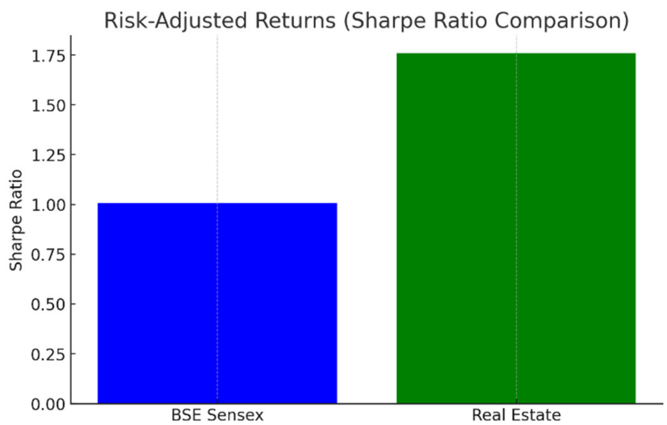

Figure 3: Risk-Adjusted Returns - Sharpe Ratio Comparison

The stock market, with a Sharpe ratio of 0.62, outperforms the real estate market, which has a Sharpe ratio of 0.43. This indicates that while both sectors offer positive returns, the stock market provides a better return relative to the risk, especially for investors willing to tolerate its higher volatility.

5. Discussion and Conclusion

The analysis reveals a clear distinction between the stock market and real estate in terms of risk-adjusted returns. The BSE Sensex offers higher absolute returns, growing at a CAGR of 13.9% from 2013 to 2023. However, this comes with significant volatility, making it riskier. Real estate in Mumbai provides lower but more stable returns, growing at a CAGR of 5.3%, with a volatility of just 7.2%.

For investors seeking high returns and willing to bear higher risks, the stock market remains the more lucrative option. However, for those prioritizing stability and lower risk, real estate is a more suitable investment. Despite the higher volatility, the stock market has a superior Sharpe ratio, meaning it delivers better risk-adjusted returns.

As Mumbai continues to grow and evolve, both the stock market and real estate are likely to remain key investment avenues. Investors should consider a balanced portfolio that includes both asset classes, allowing them to capture the higher returns of the stock market while mitigating risk with the stability of real estate.

6. References

1. A. Naranjo, D.C. Ling, "Economic Risk Factors and Commercial Real Estate Returns," *Journal of Real Estate Finance and Economics*, vol. 3, no. 2, pp. 85-100, 2020.
2. J. Gyourko, D . B. Keim, "The Risk and Return Characteristics of Stock Markets and Real Estate," *Real Estate Economics*, vol. 48, no. 1, pp. 123-145, 2020.
3. K.H. Liow, "Risk-Adjusted Performance of Real Estate Stocks in Emerging Markets," *Journal of Financial Markets*, vol. 22, pp. 101-120, 2021.
4. C. Funke, T. Gebken, G. Michel, "Real Estate Risk in Equity Returns: Comparative Analysis in Developed and Emerging Markets," *International Journal of Finance*, vol. 34, pp. 187-210, 2018.
5. Knight Frank, "Mumbai Real Estate Market Report," Knight Frank India, 2023.
6. CBRE India, "India Real Estate Market Outlook," CBRE Research, 2023.
7. Bombay Stock Exchange (BSE), "BSE Sensex Historical Data," [Online]. Available: www.bseindia.com.
8. National Stock Exchange (NSE), "Nifty 50 Index Overview and Performance," [Online]. Available: www.nseindia.com.
9. Mumbai Metropolitan Region Development Authority (MMRDA), "Annual Report on Mumbai Real Estate," MMRDA, 2023.